

Application No.: 10/739,439

Case No.: 58797US002

**REMARKS**

Claims 6, 7, 10, 13, and 18 are amended. Claims 1-18 are pending.

The specification has been amended on page 3. Support for this amendment includes page 3, lines 16-30. Support for the amendment to claim 7 is inherent. Support for other amendments to the claims is discussed below.

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**§ 112 Rejections**

Claims 6, 10, 13, and 16-18 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

It is alleged claims 6, 10, 13, and 18 are indefinite because the examiner is unclear as to what is meant by "comprising laminae". It is asked in the Office Action "does this mean that (1) the entire material is a laminae, (2) the laminae is of a eutectic, (3) the individual crystallinates are laminae (plates) or (4) a separate layer within the ceramic or particle is a laminae?"

Claims 6, 10, 13, and 18 have been amended to clarify the use of the term "laminae" in the claims. Support for these amendments can be found in the specification, for example, on page 4, lines 15-20 and the original claims.

Claims 10 and 18 are alleged to be indefinite because the term "eutectic" is said to lack antecedent basis since a eutectic has not been literally defined before. More specifically, it is said

Claim 16 is indefinite because it is only directed to a ceramic but claim 8 is specifically directed to particles and the broad interpretation of ceramic is outside the scope of particles, thus claim 16 is outside the scope of claim 8.

Claim 17 is indefinite because it depends on an indefinite claim.

Claim 16 has been amended to overcome this rejection. Support for this amendment can be found in the specification, for example, on page 2, lines 22-28.

In summary, the rejection of claims 6, 10, 13, and 16-18 under 35 USC § 112, second paragraph, have been overcome, and the rejection should be withdrawn.

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**§ 103 Rejections**-U.S. Pat. Pub. No. US 2001/0030811 A1 (Kasai et al.)

Claims 1-18 stands rejected under 35 USC § 103(a) as being unpatentable over U.S. Pat. Pub. No. US 2001/0030811 A1 (Kasai et al.).

The rejection of claims 1-18 under 35 USC § 103(a) as being unpatentable over Kasai et al. ('811) is unwarranted, and should be withdrawn.

Claim 1 is directed toward transparent fused crystalline ceramic comprising in a range from 45 to 80 percent by weight Al<sub>2</sub>O<sub>3</sub> and in a range from 55 to 20 percent by weight ZrO<sub>2</sub>, based on the total weight of the transparent fused crystalline ceramic.

Claim 2 is directed toward transparent fused polycrystalline ceramic comprising in a range from 45 to 80 percent by weight Al<sub>2</sub>O<sub>3</sub> and in a range from 55 to 20 percent by weight ZrO<sub>2</sub>, based on the total weight of the transparent fused crystalline ceramic.

The term “**fused**” is defined on page 4, lines 22-24 of the specification to refer to crystalline material cooled directly from a melt or crystalline material made by heat-treating crystalline material cooled directly from a melt (e.g., alpha alumina made by heat-treating transitional alumina cooled directly from a melt).

It is submitted that a reading of Kasai et al. ('811) as a whole does not properly teach or suggest Applicant's claimed invention. Moreover, in paragraph 0031, it is stated:

... As used herein “fused” beads refer to those that are prepared by a melt, as opposed to a sol-gel process. Such fused beads may be completely amorphous (i.e., noncrystalline) or they may have crystalline and noncrystalline regions. Upon initial formation from a melt, typically the beads are substantially amorphous (but can contain some crystallinity); however, upon further heat treatment, the beads can develop crystallinity in the form of a nanoscale glass ceramic microstructure (i.e., microstructure in which a significant volume fraction of crystals less than 100 nanometers in diameter has grown from within an initially amorphous structure). ...  
(underlining added)

First, even though it is stated that some crystallinity can be present in the initially formed amorphous material, there is not clear teaching or suggestion that this would be the result following

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the Kasai et al. teachings for the particular compositions claimed by Applicant. Second, heat-treating the amorphous material to develop crystallinity from the amorphous material is a fundamentally different process than obtaining crystalline material directly cooled from the melt. It is submitted that it is clear to one of ordinary skill in the art that the microstructures resulting from these different processes are significantly different, and readily distinguishable from each other.

Claims 3-18 depend directly or indirectly from claim 2. Claim 2 is patentable, for example, for the reasons given above. Thus, claims 3-18 are also be patentable.

In summary, the rejection of claims 1-18 under 35 USC § 103(a) as being unpatentable over Kasai et al. ('811) should be withdrawn.

-U.S. Pat. Nos. 4,772,511 (Wood et al.) and 5,185,299 (Wood et al.)

Claims 1-5 and 7-9 stands rejected under 35 USC § 103(a) as being obvious over either Wood et al. ('511) or Wood et al. ('299).

The rejections of claims 1-5 and 7-9 under 35 USC § 103(a) as being obvious over either Wood et al. ('511) or Wood et al. ('299) are unwarranted and should be withdrawn.

As discussed above, claims 1 and 2 are directed toward a transparent fused crystalline and a transparent fused polycrystalline ceramic, respectively. The term "fused" is defined on page 4, lines 22-24 of the specification to refer to crystalline material cooled directly from a melt or crystalline material made by heat-treating crystalline material cooled directly from a melt (e.g., alpha alumina made by heat-treating transitional alumina cooled directly from a melt). There is no teaching or suggestion in Wood et al. ('511) and Wood et al. ('299) with regard to practicing their invention of directly cooling a melt to provide crystalline material. Further, it is stated in the Office Action that "[t]he examiner acknowledges that the reference does not teach the fused limitation but one skilled in the art would have appreciated that the materials defined by the reference can be of a similar microstructure and thus be within the broad interpretation of 'fused'". Further, it is stated:

...In addition, applicants do not adequately describe the fused limitation in the specification as only pertaining to microspheres made by a melt process. Applicants must shown [sic] clear and

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convincing evidence that the beads of the reference are distinct from the claimed beads (in terms of the microstructure, etc.).

Again, Applicants define, with respect to their invention, "fused" to refer to crystalline material cooled directly from a melt or crystalline material made by heat-treating crystalline material cooled directly from a melt (e.g., alpha alumina made by heat-treating transitional alumina cooled directly from a melt). This process of cooling directly from a melt to provide the crystalline material is fundamentally different than the processes described in Wood et al. ('511) and Wood et al. ('299) to make their material. Moreover, it is submitted that it is clear to one of ordinary skill in the art that the microstructures resulting from these different processes are significantly different, and readily distinguishable from each other.

Claims 3-5 and 7-9 directly or indirectly add additional features to claim 2. Claim 2 is patentable, for example, for the reasons given above. Thus, claims 3-5 and 7-9 are also patentable.

In summary, the rejection of claims 1-5 and 7-9 under 35 USC § 103(a) as being obvious over Wood et al. ('511) and Wood et al. ('299) should be withdrawn.

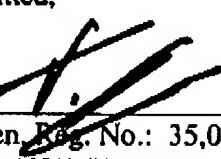
In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested.

Respectfully submitted,

Date

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